

## HIGHLIGHTS OF PRESCRIBING INFORMATION

These highlights do not include all the information needed to use DIFFERIN safely and effectively. See full prescribing information for DIFFERIN Lotion.

**DIFFERIN® (adapalene) Lotion 0.1%**  
**For topical use only**

**Initial U.S. Approval: 1996**

### -----INDICATIONS AND USAGE-----

DIFFERIN Lotion is a retinoid product indicated for the topical treatment of acne vulgaris in patients 12 years and older (1)

### -----DOSAGE AND ADMINISTRATION-----

Apply a thin film of DIFFERIN Lotion to the entire face and other affected areas of the skin once daily, after washing gently with a mild soapless cleanser. Dispense a nickel size amount of DIFFERIN Lotion (3-4 actuations of the pump) to cover the entire face. Avoid application to the areas of skin around eyes, lips and mucous membranes. (2)

DIFFERIN Lotion is for topical use only and not for oral, ophthalmic, or intravaginal use. (2)

### -----DOSAGE FORMS AND STRENGTHS-----

Each gram of the lotion contains 1 mg (0.1%) adapalene in an oil-in-water emulsion. (3)

### -----CONTRAINDICATIONS-----

None. (4)

### -----WARNINGS AND PRECAUTIONS-----

Ultraviolet Light and Environmental Exposure: Avoid exposure to sunlight and sunlamps. Wear sunscreen when sun exposure cannot be avoided. (5.1)

Erythema, scaling, dryness, and stinging/burning may occur with use of DIFFERIN Lotion. (5.2)

### -----ADVERSE REACTIONS-----

Dry skin of mild to moderate severity was the most frequently reported ( $\geq 1\%$ ) treatment related adverse event. Erythema, scaling, dryness, burning/stinging were also seen during treatment. (6)

**To report SUSPECTED ADVERSE REACTIONS, contact Galderma Laboratories L.P. at 1-866-735-4137 or FDA at 1-800-FDA-1088 or [www.fda.gov/medwatch](http://www.fda.gov/medwatch)**

### -----DRUG INTERACTIONS-----

Concomitant use of topical products with a strong drying effect can increase skin irritation. Use with caution, especially in using preparations containing sulfur, resorcinol, or salicylic acid in combination with DIFFERIN Lotion. (7.1)

**See 17 for PATIENT COUNSELING INFORMATION**

**Revised: March 2010**

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## **FULL PRESCRIBING INFORMATION**

### **1 INDICATIONS AND USAGE**

DIFFERIN Lotion is indicated for the topical treatment of acne vulgaris in patients 12 years and older.

### **2 DOSAGE AND ADMINISTRATION**

Apply a thin film of DIFFERIN Lotion to the entire face and other affected areas of the skin once daily, after washing gently with a mild soapless cleanser. Dispense a nickel size amount of DIFFERIN Lotion (3-4 actuations of the pump) to cover the entire face. Avoid application to the areas of skin around eyes, lips and mucous membranes.

DIFFERIN Lotion is for topical use only and not for oral, ophthalmic, or intravaginal use.

### **3 DOSAGE FORMS AND STRENGTHS**

Each gram of the lotion contains 1 mg (0.1%) adapalene in an oil-in-water emulsion.

### **4 CONTRAINDICATIONS**

None.

### **5 WARNINGS AND PRECAUTIONS**

#### **5.1 Ultraviolet Light and Environmental Exposure**

Exposure to sunlight, including sunlamps, should be avoided during the use of DIFFERIN Lotion. Patients with high levels of sun exposure and those with inherent sensitivity to sun should be warned to exercise caution. Use of sunscreen products and protective apparel (e.g. hat) are recommended when exposure cannot be avoided. Weather extremes, such as wind or cold, may be irritating to patients under treatment with DIFFERIN Lotion.

#### **5.2 Local Cutaneous Reactions**

Signs and symptoms of local skin irritation (such as erythema, scaling, dryness, stinging/burning) may be experienced with use of DIFFERIN Lotion. These are most likely to occur

during the first 2 weeks of treatment, are mostly mild to moderate in severity, and usually lessen with continued use of DIFFERIN Lotion. Depending upon the severity of these side effects, patients should be instructed to use a moisturizer, reduce the frequency of the application of DIFFERIN Lotion 0.1%, or discontinue use.

DIFFERIN Lotion should not be applied to cuts, abrasions, eczematous or sunburned skin. As with other retinoids, use of “waxing” as a depilatory method should be avoided on skin treated with DIFFERIN Lotion.

Avoid concomitant use of other potentially irritating topical products (abrasive soaps and cleansers, soaps and cosmetics that have strong skin-drying effect and products with high concentrations of alcohol, astringents, spices, or limes).

## 6 ADVERSE REACTIONS

### 6.1 Clinical Studies Experience

Because clinical studies are conducted under widely varying conditions, adverse reaction rates observed in the clinical studies of a drug cannot be directly compared to rates in the clinical studies of another drug and may not reflect the rates observed in practice.

A total of 2141 subjects with acne vulgaris, 12 years and older, were treated once daily for 12 weeks. Of these, 1068 were exposed to DIFFERIN Lotion during the clinical trials. A total of 1057 subjects completed at least one post treatment evaluation.

Related adverse reactions that were reported in at least 1% of patients treated with DIFFERIN Lotion or with the Vehicle Lotion are presented in Table 1.

The majority of cases was transient, mild to moderate in severity and was managed with moisturizers.

**Table 1 Adverse Reactions Reported in Clinical Trials by At Least 1% of Patients**

<b>System Organ Class/Preferred Term</b>	<b>Adapalene Lotion 0.1% N = 1068</b>	<b>Vehicle Lotion N = 1073</b>
<b>Subjects with Related AR(s)</b>	10.2%	4.6%
Dry skin	7.7%	3.0%
Skin irritation	1.5%	0.7%
Skin burning/skin discomfort	0.9%	0.0%
Sunburn	0.6%	0.6%

Local tolerability evaluations, presented in Table 2, were conducted at each study visit in clinical trials. Erythema, scaling, dryness, burning/stinging were assessed:

**Table 2: Incidence of Local Cutaneous Irritation, for Subjects Whose Irritation Score was Higher than at Baseline, in Controlled Clinical Studies Adverse Reactions (Differin Lotion Group N=1057\*)**

Combined Study 1 and Study 2	Maximum Severity During Treatment (N = 1057)			Week 12 Treatment Severity (N = 950)		
Local Cutaneous Irritation (skin irritation)	Mild	Moderate	Severe	Mild	Moderate	Severe
Erythema	21.8%	8.0%	0.2%	7.9%	2.6%	0.2%
Scaling	25.3%	6.5%	0.1%	5.3%	1.1%	0
Dryness	36.1%	7.3%	0.3%	7.6%	2.0%	0
Stinging/burning	22.1%	7.0%	0.9%	4.6%	1.0%	0.4%

\*Data from 11 subjects with missing data are not included.

Local tolerability scores for erythema, scaling, dryness, burning/stinging rose during the first two weeks of treatment and generally decreased thereafter.

## 7 DRUG INTERACTIONS

### Concomitant Topical Medications

Concomitant topical acne therapy should be used with caution because a possible cumulative irritancy effect may occur, especially with the use of peeling, desquamating, or abrasive agents. Caution should be exercised in using preparation containing sulfur, resorcinol or salicylic acid in combination with DIFFERIN Lotion.

No formal drug-drug interaction studies were conducted with DIFFERIN Lotion.

## 8 USE IN SPECIFIC POPULATIONS

### 8.1 Pregnancy

Pregnancy Category C. There are no well-controlled trials in pregnant women treated with DIFFERIN Lotion. Therefore, DIFFERIN Lotion should be used during pregnancy only if the potential benefit justifies the potential risk to the fetus. Animal reproduction studies have not been conducted with DIFFERIN Lotion. Furthermore, such studies are not always predictive of human response.

#### Human Data

In clinical trials involving DIFFERIN Lotion, 0.1% in the treatment of acne vulgaris, women of childbearing potential initiated treatment only after a negative pregnancy test. Two women became pregnant while using DIFFERIN Lotion, 0.1%. One patient delivered a healthy full term baby and the other patient electively terminated her pregnancy.

#### Animal Data

No teratogenic effects were observed in rats treated with oral doses of 0.15 to 5.0 mg adapalene/kg/day, up to 25 times ( $\text{mg}/\text{m}^2/\text{day}$ ) the maximum recommended human dose (MRHD) of 2 grams of DIFFERIN Lotion. However, teratogenic changes were observed in rats and rabbits when treated with oral doses of  $\geq 25$  mg adapalene/kg/day representing 123 and 246 times MRHD, respectively. Findings included cleft palate, microphthalmia, encephalocele and skeletal abnormalities in rats; and umbilical hernia, exophthalmos and kidney and skeletal abnormalities in rabbits.

Dermal teratology studies conducted in rats and rabbits at doses of 0.6-6.0 mg adapalene/kg/day [25-59 times ( $\text{mg}/\text{m}^2$ ) the MRHD] exhibited no fetotoxicity and only minimal increases in supernumerary ribs in both species and delayed ossification in rabbits.

Systemic exposure (AUC 0-24h) to adapalene at topical doses (6.0 mg/kg/day) in rats represented 101 times the exposure to adapalene in patients with acne treated with DIFFERIN Lotion applied to the face, chest and back (2 grams applied to 1000  $\text{cm}^2$  of acne-involved skin).

### **8.3 Nursing Mothers**

It is not known whether adapalene is excreted in human milk following use of DIFFERIN Lotion. Because many drugs are excreted in human milk, caution should be exercised when DIFFERIN Lotion is administered to a nursing woman.

### **8.4 Pediatric Use**

Safety and effectiveness of DIFFERIN Lotion in pediatric patients under the age of 12 have not been established.

### **8.5 Geriatric Use**

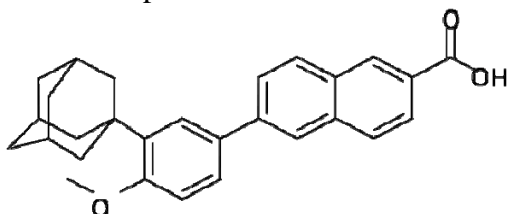
Clinical studies of DIFFERIN Lotion did not include sufficient numbers of subjects aged 65 and over to determine whether they respond differently from younger subjects.

## 11 DESCRIPTION

DIFFERIN (adapalene) Lotion, 0.1% for topical use, is an adapalene-based product.

Adapalene is a naphthoic acid derivative with retinoid-like properties. The chemical name for adapalene is (6-[3-(1-adamantyl)-4-methoxyphenyl]-2-naphthoic acid). Adapalene has the following structural formula:

Adapalene:



Molecular formula: C<sub>28</sub>H<sub>28</sub>O<sub>3</sub>

Molecular weight: 412.5

DIFFERIN Lotion contains the following inactive ingredients: carbomer 941, disodium edetate, medium chain triglycerides, methylparaben, phenoxyethanol, poloxamer 124, polyoxyl-6-polyoxyl-32 palmitostearate, PPG-12 / SMDI copolymer, propylene glycol, propylparaben, sodium hydroxide, stearyl alcohol, and purified water.

## 12 CLINICAL PHARMACOLOGY

### 12.1 Mechanism of Action

Adapalene binds to specific retinoic acid nuclear receptors but does not bind to cytosolic receptor protein. Biochemical and pharmacological profile studies have demonstrated that adapalene is a modulator of cellular differentiation, keratinization and inflammatory processes. However, the significance of these findings with regard to the mechanism of action of adapalene for the treatment of acne is unknown.

### 12.2 Pharmacodynamics

Pharmacodynamics of DIFFERIN Lotion is unknown.

### 12.3 Pharmacokinetics

Systemic exposure of adapalene following a topical application of DIFFERIN Lotion was studied in one clinical study. Fourteen subjects at 18-29 years of age with severe acne were treated with 2 g of DIFFERIN Lotion once daily for 30 days to approximately 1000 cm<sup>2</sup> of acne involved skin. Serial plasma samples were collected for 24 or 72 hours following application on days 1, 15 and 30. All plasma concentrations for 12 out of 14 patients were below the limit of quantification (LOQ=0.1 ng/mL). One patient had one sample above LOQ at day 30 and the other patient had four plasma samples above LOQ on both days 1 and 15, which ranged from 0.102 and 0.131 ng/mL. Due to the limited number of available data points, PK analysis was not undertaken.

## **13 NONCLINICAL TOXICOLOGY**

### **13.1 Carcinogenesis, Mutagenesis, Impairment of Fertility**

No carcinogenicity, mutagenicity and impairment of fertility studies were conducted with DIFFERIN Lotion.

Carcinogenicity studies with adapalene have been conducted in mice at topical doses of 0.4, 1.3, and 4.0 mg/kg/day (1.2, 3.9, and 12 mg/m<sup>2</sup>/day), and in rats at oral doses of 0.15, 0.5, and 1.5 mg/kg/day (0.9, 3.0, and 9.0 mg/m<sup>2</sup>/day). In terms of body surface area, the highest dose levels are 9.8 (mice) and 7.4 times (rats) the MRHD of 2 grams of DIFFERIN Lotion. In the rat study, an increased incidence of benign and malignant pheochromocytomas in the adrenal medulla of male rats was observed.

No photocarcinogenicity studies were conducted with adapalene. However, animal studies have shown an increased tumorigenic risk with the use of pharmacologically similar drugs (e.g. retinoids) when exposed to UV irradiation in the laboratory or sunlight. Although the significance of these findings to humans is not clear, patients should be advised to avoid or minimize exposure to either sunlight or artificial irradiation sources.

Adapalene did not exhibit mutagenic or genotoxic effects *in vitro* (Ames test, Chinese hamster ovary cell assay, mouse lymphoma TK assay) or *in vivo* (mouse micronucleus test). In rat oral studies, 20 mg adapalene/kg/day (120 mg/m<sup>2</sup>/day; 98 times the MRHD based on mg/m<sup>2</sup>/day comparison) did not affect the reproductive performance and fertility of F0 males and females, or growth, development and reproductive function of F1 offspring.

## **14 CLINICAL STUDIES**

The safety and efficacy of DIFFERIN Lotion applied once daily for the treatment of acne vulgaris were assessed in two 12-week, multicenter, controlled clinical studies of similar design, comparing DIFFERIN Lotion to the Lotion vehicle in acne subjects.

In Study 1, 1075 subjects were randomized to DIFFERIN Lotion or vehicle. The median age of these subjects was 16.7 years old and 53.1% were females. At baseline subjects had between 20 to 50 inflammatory lesions and 30 to 100 non-inflammatory lesions. The majority of subjects (91.0%) had a baseline IGA score of ‘Moderate’.

In Study 2, 1066 subjects were randomized to DIFFERIN Lotion or vehicle. The median age of subjects was 16.7 years old and 53.7% were females. At baseline subjects had the same inclusion criteria as in Study 1 and 95.7% of subjects had a baseline IGA score of ‘Moderate’.

The outcome of the two studies is presented in Table 3.

**Table 3: Clinical Study Primary Efficacy Results at Week 12**

Study 1		
	<b>Differin Lotion</b> (N=533)	<b>Vehicle Lotion</b> (N=542)
<b>IGA Success</b>	<b>140 (26.3%)</b>	<b>94 (17.3%)</b>
<b>Total Lesions: Mean Absolute (Percent) Change</b>	<b>37.9 (51.5%)</b>	<b>26.7 (37.1%)</b>
<b>Inflammatory Lesions: Mean Absolute (Percent) Change</b>	<b>14.7 (54.9%)</b>	<b>10.6 (40.3%)</b>
<b>Non-inflammatory Lesions: Mean Absolute (Percent) Change</b>	<b>23.2 (49.6%)</b>	<b>16.1 (35.7%)</b>

Study 2		
	<b>Differin Lotion</b> (N=535)	<b>Vehicle Lotion</b> (N=531)
<b>IGA Success</b>	<b>129 (24.1%)</b>	<b>87 (16.4%)</b>
<b>Total Lesions: Mean Absolute (Percent) Change</b>	<b>32.4 (44.6%)</b>	<b>23.4 (32.8%)</b>
<b>Inflammatory Lesions: Mean Absolute (Percent) Change</b>	<b>12.7 (46.0%)</b>	<b>10.2 (36.9%)</b>
<b>Non-Inflammatory Lesions: Mean Absolute (Percent) Change</b>	<b>19.6 (43.1%)</b>	<b>13.1 (30.2%)</b>

## 16 HOW SUPPLIED/STORAGE AND HANDLING

DIFFERIN (adapalene) Lotion, 0.1%, is packaged in 2 oz (59 mL), and 4 oz (118 mL) bottles which is equipped with a Lotion dispensing pump.

The DIFFERIN Lotion is supplied as follows:



2 oz bottle pump	<b>0299-5912-02</b>
4 oz bottle pump	<b>0299-5912-04</b>

#### Storage and handling

- Store at controlled room temperature, 20 – 25 °C (68 – 77 °F); excursions permitted to 15 – 30 °C (59 – 86 °F).
- Do not freeze.
- Do not refrigerate.
- Protect from light.
- Keep out of reach of children.
- Keep away from heat.
- Keep bottle tightly closed.

## 17 PATIENT COUNSELING INFORMATION

- Apply a thin film of DIFFERIN Lotion to the affected areas of the skin once daily, after washing gently with a mild soapless cleanser. Dispense a nickel size amount of DIFFERIN Lotion (3-4 actuations of the pump) to cover the entire face. Avoid application to the areas of skin around eyes, lips and mucous membranes. DIFFERIN Lotion may cause irritation such as erythema, scaling, dryness, stinging or burning.
- Advise patients to cleanse the area to be treated with a mild or soapless cleanser; pat dry. Apply DIFFERIN Lotion to the entire face or other acne affected areas as a thin layer, avoiding the eyes, lips and mucous membranes.
- Exposure of the eye to this medication may result in reactions such as swelling, conjunctivitis and eye irritation.
- Patients should be advised not to use more than the recommended amount and not to apply more than once daily as this will not produce faster results, but may increase irritation.
- Advise patients to minimize exposure to sunlight including sunlamps. Recommend the use of sunscreen products and protective apparel (e.g., hat) when exposure cannot be avoided.
- Moisturizers may be used if necessary; however, products containing alpha hydroxy or glycolic acids should be avoided.
- This medication should not be applied to cuts, abrasions, eczematous, or sunburned skin.
- Wax depilation should not be performed on treated skin due to the potential for skin erosions.
- This product is for external use only.

Marketed for:

GALDERMA LABORATORIES, L.P., Fort Worth, Texas 76177 USA

Manufactured by: Galderma Production Canada Inc., Baie d'Urfé, QC, H9X 3S4 Canada

Made in Canada

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